NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

RANGE PLANTING

(Acre)
CODE 550

DEFINITION

Establishing adapted plants by seeding on native grazing land (does not include pasture and hayland planting).

PURPOSES

This practice serves to:

- Prevent excessive soil and water loss and improve water quality.
- Produce more forage for livestock.
- Improve the visual quality of rangeland.
- Provide or improve forage, browse, or cover for wildlife.
- Restore historic plant communities.

CONDITIONS WHERE THIS PRACTICE APPLIES

This practice applies to land where the planned use is rangeland, native pasture, grazable forest, and grazed wildlife land. Generally, seeding will not be done when 15% composition by weight of the desirable plants are present, are well distributed over the treated area, and can be managed to a stand within an acceptable time frame.

CRITERIA

General Criteria Applicable for All the Purposes Stated Above

Species, cultivars or varieties recommended must be adapted to climate conditions, soils, landscape position, ecological sites and compatible with management objectives.

Species, cultivars, or varieties selected shall provide adequate cover to control erosion by wind and/or water within an acceptable period of time.

Seedbed preparation and planting methods will be suitable to meet any special needs for obtaining an acceptable establishment of planted species.

Planting depth, dates, seeding rates, soil amendments, and fertilizer needs for establishment, minimum seed quality standards, and management during the establishment period, such as weed control and deferment shall be followed to enhance establishment success.

Seeding rates will be calculated on a pure live seed (PLS) basis unless noted otherwise.

Seeding should be planned so the cooperator has an understanding of the management required to maintain the desired plant community.

Additional Criteria for Improved Forages for Livestock

Selection of species shall be designed to meet the desired nutritional and palatability requirements during the desired season for the kind and class of livestock.

Additional Criteria for Improved Water Quality and Quantity.

Select species that will maintain a stable soil surface and increase infiltration.

A mixture of shrubs and trees indigenous to the site shall be selected when riparian area, stream bank stability and water temperature criteria are important.

Additional Criteria for Improving Forage, Browse or Cover for Wildlife.

Select species to meet dietary and palatability requirements for the intended wildlife species as well as any cover requirements.

Species will be selected and planted in a manner that will meet the cover requirements of the wildlife species of concern.

Additional Criteria for Restoring a Plant Community to its Historic Climax.

Select species indigenous to the site.

CONSIDERATIONS

Planting materials selected should contribute to wildlife and aesthetics when the opportunity exists.

Other practices such Brush Management, Herbaceous Weed Management, or Grazing Land Mechanical Treatment may be used for site preparation.

The use of certified planting materials should be encouraged. However, economics, distance and source limitations on seed and plant stock should be considered.

PLANS AND SPECIFICATIONS

Appropriate forms, worksheets, etc., may be used to develop site-specific specifications, certification, and documentation. If there are needed prerequisite practices, these shall be included in the CPO.

OPERATION AND MAINTENANCE

Identify any required items needed to assist in stand establishment such as mowing, burning, flash grazing and/or herbicides to control weeds. Address insect and disease control needs where they are known to create establishment problems.

Any necessary replanting due to drought, insects or other uncontrollable events which prevented adequate stand establishment should be addressed as soon as possible. Remedial action for establishment shall be provided.

REVIEWERS:

NRCS Plant Material Specialist
NRCS Resource Specialist
NRCS State Office Specialists
ARS Range Scientists

GENERAL SPECIFICATIONS

Seedbed Preparation

The seedbed shall be firm, free of weed competition, and not have a restrictive layer such as a plowpan.

Cover Crop

The Cover Crop (340) standard and specification shall be used for guidance in establishing a cover or dead litter crop.

Managing Competitive Cover

If vegetative cover consists primarily of highly competitive and/or potentially allelopathic grasses such as silver bluestem, broomsedge bluestem, tall dropseed, sand dropseed, threeawns, fescue, or undesired introduced bluestems, the area should be plowed and seeded to a noncompetitive sorghum or small grain cover for a minimum of two consecutive years prior to seeding as long as soils are suitable. Prescribed burning of the vegetative cover is also a tool to prevent allelopathic problems. See Prescribed Burning (338) standard and specification.

Seeding Operation

Drilling

Whenever possible native grasses should be seeded with a grass drill equipped with double disk openers having depth bands followed by cultipacker, press wheels or drag chains. (Press wheels or cultipacking are preferred). Seed should be planted 1/4 to 3/4 inches deep. The distance between rows should not exceed 12 inches.

Broadcasting

Broadcasting may be used where dead litter crops are not required and the seed can be firmly anchored into the soil. Seedbed modification by cultipacking or other means will be needed to accomplish this. Cultipacking before and after seed placement is preferred.

Hand broadcasting is acceptable where equipment cannot be operated because of terrain, and an adequate stand of grasses can be expected on the seeded area.

Fertilizer

Fertilizer normally will not be recommended when reseeding native rangeland because it will encourage excessive weed growth. However, it may be necessary to fertilize on coarse textured or severely eroded soils that may not have residual or inherent fertility of sufficient levels to support emerging grasses during establishment. In these cases, fertilize following the emergence of the seeded grasses to limit weeds from using the fertilizer. A soils test should be taken prior to fertilization. The soil test should note "for establishment" instead of listing a yield goal that would be for production purposes.

Reseeding Native Range or Woodlands Following Brush Management

Seeding is generally not recommended as long as there is 15 percent of the important grasses well distributed over the site. Seeding may be needed where there is significant ground disturbance.

Mechanical methods to remove brush, such as dozing, rootplowing, raking, chaining and/or burning can be a part of the seedbed preparation. See Brush Management (314) standard and specifications. Additional seedbed preparation may be needed with heavy or farm type equipment so that seeding equipment can get over the area.

It may be necessary to plant cover crops for two consecutive years prior to seeding to reduce resprouting of brush species, especially the oak species. A technical determination will be made on the need for additional years of cover crops.

Drill or broadcast to adapted species. Seed must have mineral contact with the soil. Seed into a firm seedbed. Use aerial application only when conventional equipment or broadcasting is impractical.

Pits left from individual treedozing can be an excellent seedbed as long as the treedozing is done during the normal seeding time. In these cases, pro-rate the seeding rate based on the percent ground disturbance. Hand application before the soil has crusted is permissible.

On soils subject to wind erosion, cover needs should be planned to keep erosion rates down to the tolerance level of the soil to be seeded.

Other methods will be limited to special conditions with prior approval of the State Range Management Specialist (SRMS).

Origin of Seed

The first preference for seed selection will be adapted certified named varieties, followed by adapted non-certified named varieties, then followed by common local ecotypes (local native harvest).

Native Sources

The origin of native harvest seed shall not exceed the following distance guidelines from the area of intended use:

- 200 miles to the north
- 300 miles to the south
- 100 miles to the east
- 200 miles to the west

Named varieties are exempt from mileage requirements, so long as they are seeded within their range of adaptability.

Seed Quality and Definitions

Seed analysis

Texas Seed Law specifies the kind and amount of weed seed permitted; the requirements for a current analysis report; and labeling of all seed to show its purity, germination, date of last germination test, and weed seed content. Tetrazolium tests (TZ) are not allowed except for plains bristlegrass.

Texas Seed Law

The germination test is valid for 9 months after the end of the month the test was made so long as the seed remains in Texas. (Note: The state law pertains to the sale, offer for sale, expose for sale or transport for sale of any agricultural seed within Texas.) Seed purchased outside of Texas must comply with all federal seed laws.

Interpretation of Current Analysis Report.

For seed purchased during the valid period of the germination test, the analysis report may be considered current for the full seeding period in effect as the time of purchase. (If seed is purchased March 1 and the valid date expires March 31, the analysis report may be considered current if the seed is planted by June 1, which is the end of the spring seeding period. If the seed is to be planted during a late seeding season, a new germination test should be obtained.)

Cooperators who harvest seed for their own use must have an analysis completed. Regardless of who grows or sells the seed, a copy of the current (within nine months) analysis must be provided. The analysis will show purity, germination, harvest location, and weed content. Noxious or weed seed content in excess of that permitted by state seed law will not be allowed for use.

Pure Live Seed (PLS) Determination

Compute by adding percentage of germination and firm seed. Multiply this sum by purity. Divide the product by 100 for percent PLS.

$$\frac{(\%\ \text{Germ.} + \%\ \text{Firm Seed}) \times \text{Purity}}{100} = \%\ \text{PLS}$$

(Firm, hard or dormant are congruent terms)

Seeding Rates and Mixtures

Refer to the Planting Rates for Texas. For wildlife plantings refer to Wildlife Upland Habitat Management (645) standard.

Green sprangletop can be added to a full seeding rate at .5 to 1.0 lbs. Per acre as a filler grass, which will provide quick cover. Deviations from the standards and specifications can only be approved by the State Range Management Specialist (SRMS).

Planting Dates (Statewide)

March 15 to May 1 (optimum)

December 1 to June 1 (maximum)

These seeding dates can be extended by one month with supplemental irrigation.

Management During Establishment

Seeded grasses should not be grazed the first year following seeding and should be deferred the following growing season if needed to insure establishment. Exceptions would be where flash grazing is used for weed control (not more than 2 weeks). Dormant season use is permissible as long as adequate residue is left to ensure regrowth and protect from erosion.

During establishment, excessive amounts of competitive weedy plants may be controlled by the following methods:

Herbicides

Chemicals used must be federally and locally registered and must be applied in accordance with authorized registered uses, directions on label, and other federal or state policies and requirements. Seeded species should have 3 to 5 leaves per plant before herbicides are applied. Generally, when 3 weeds per square foot or a 50% canopy are observed, weed control should be considered.

Mowing

Weeds should be mowed when they reach a height of 6 to 8 inches. Mowing should be above the height of seeded plants. The cover crop should also be maintained. Mowing should not be done when daily maximum air temperature exceeds 95º and the humidity falls below 30% to prevent dehydration of the seedlings. Generally, mowing should not be done after July 15.

Grazing

Flash grazing by livestock may be used to control annual grasses and forbs and a time when they are small and palatable. This method will not be used later than July 15, except when abnormal summer moisture promotes excessive weed production. Flash grazing will not be used when the soils are wet and hoof action will damage seedlings.

Deviation from these dates requires approval from the State Range Management Specialist (SRMS) along with a written statement of justification from the responsible technician.

Flash grazing is using high concentrations of livestock to harvest palatable competitive plants in a short period of time. Should there be significant use or damage to seeded plants, the grazing should cease immediately. In cases where additional applications are needed, the procedure should be repeated soon enough to prevent the weedy vegetation from becoming tough or unpalatable.

OTHER CONSIDERATIONS

When seeding on terraced land, a technical determination should be made concerning terrace removal prior to seeding. Terraces should be removed if:

- low places are allowing water to concentrate that prevents plant establishment,
- it is anticipated that future livestock trails will cause concentrated flow and excessive erosion,
- leaving them in place will cause poor water distribution,
- litter damming can cause overtopping, or
- water starvation will have a significant impact on the seeded species below the terraces.

Generally, it is recommended to remove the terraces prior to seeding.

Forbs, legumes, and some shrubs are the quality component of livestock and wildlife diets. Adapted forbs, legumes and shrubs should be considered for inclusion into range seeding mixtures.

Because of their proven adaptability and persistence, consideration should be given to using locally native species in the mix whenever possible.

Protect from unprescribed burning.

Protect from severe insect damage where practical. Refer to Pest Management (595) standard and specifications.

Criteria for Determining Stand Establishment

Number of plants per square foot - Well distributed throughout field

0 to 0.05 - *Failure*. Reapplication required.

0.05 to 0.1 - *Probable Failure*. Reapplication recommended.

0.1 to 0.5 - *Questionable*. Technician and producer will decide whether or not to reapply. Factors to consider are vigor of existing plants, potential to spread, extent of competition, length of contract, weather considerations, adequacy of erosion control and desires of producer.

over 0.5 - *Satisfactory.* Transects should be located in representative areas of the field. One hundred readings, 3 - 5 steps apart with one-foot square quadrats are recommended for recording the plant counts. Count the total number of plants occurring within the quadrats and divide by 100 to get the number of plants per square foot. More than one transect may be needed on large fields or where stand establishment is not uniform. Delineate those areas of the planted area that do not meet establishment criteria

Time of Making Stand Evaluations

Determinations should be made at the end of the second growing season unless the technician knows the grass emerged and died during the first season, in which case the determination should be made the first year.

APPROVAL AND CERTIFICATION

RANGE PLANTING

(ACRE)

CODE 550

PRACTICE STANDARD

PRACTICE STANDARD APPROVED

_____/s Homer Sanchez_____ _____September 24, 2001_____

State Range Management Specialist Date

This practice standard is needed in _____Field Office.

_____ _____

Natural Resource Manager Date

CERTIFICATION:

Reviewed and determined adequate without need of revision.

_____ _____

Zone Range Management Specialist Date

_____ _____

Zone Range Management Specialist Date

_____ _____

Zone Range Management Specialist Date

_____ _____

Zone Range Management Specialist Date

_____ _____

Zone Range Management Specialist Date

Table 1. Seeding Rates for Texas

Name	Variety	Seeding rate lb. PLS per acre3/ 6/	Native (N) or Introduced (I)	Season of growth	
PERENNIAL GRASSES1/ 4/					
Black samson		2	N	W	
Bluestem	Angleton, Australian, Caucasian, Gordo, King Ranch, Kleberg, Medio, Pretoria-90, T-587, WW-B Dahl	1.0	I	W	
Bluestem	Ganada, Plains, WW-Ironmaster, WW-Spar	1.8	I	W	
Bluestem: cane, silver		1.2	N	W	
Bluestem: big		6.0	N	W	
Bluestem: sand		6.0	N	W	
Bluestem: little		3.4	N	W	
Bristlegrass: plains 5/		3.0	N	W	
Buffalograss, burs		8.0	N	W	
Buffalograss, dehulled		3.0	N	W	
Buffelgrass, burs		2.0	I	W	
Buffelgrass, dehulled		1.0	I	W	
Catclaw	sensitive briar	2.0	N	W	
Compass plant		2.0	N	W	
Cottontop: Arizona		1.2	N	W	
Dropseed, giant		1.0	N	W	
Dropseed, mesa		1.0	N	W	
Dropseed, sand		1.0	N	W	
Dropseed, spike		1.0	N	W	
Dropseed, tall		1.0	N	W	
Eastern gamagrass 8/	Iuka, Iuka IV, Pete, San Marcos germplasm, Texas Sue, "Jackson,' local harvest	10.0	N	W	
False Rhodesgrass,two-flower		1.2	N	W	
False rhodesgrass, four-flower		1.2	N	W	
Galletagrass		5.2	N	W	
Grama, black		1.5	N	W	
Grama, blue		1.5	N	W	
Grama, sideoats		4.5	N	W	
Green panicum (filler only)		Up to 1.0	I	W	
Green sprangletop		1.6	N	W	
Guineagrass (filler)		Up to 1.0	I	W	
Indiangrass, yellow		4.5	N	W	
Indian ricegrass		5.4	N	W	
Johnsongrass		10.0	I	W	
Kleingrass	Selection-75	1.5	I	W	
Kleingrass	Verde	1.7	I	W	
Lovegrass, atherstone		1.5	I	W	
Lovegrass, Lehman		1.5	I	W	
Lovegrass, weeping		1.5	I	W	
Lovegrass, Wilman		1.5	I	W	
Lovegrass: sand, sandhill		1.5	N	W	

Table 1. Seeding Rates for Texas

Name	Variety	Seeding rate lb. PLS per acre3/ 6/	Native (N) or Introduced (I)	Season of growth	
Orchardgrass		5.0	I	C	
Panicum: blue (filler)		Up to 1.0	I	W	
Pappasgrass: pink, whiplash		2.5	N	W	
Prairie acacia		2.0	N	W	
Sacaton: alkali, big		1.0	N	W	
Sandreed, big		4.0	N		
Sorghum almum (filler)		Up to 1.0	I	W	
Switchgrass	'Alamo'	2.0	N	W	
Switchgrass	Blackwell', 'Grenville', 'Kanlow', local harvest	3.4	N	W	
Texas bluegrass		0.8	N	C	
Texas wintergrass		15.0	N	C	
Tick clover		2.0	N	W	
Trephrosia		4.0	N	W	
Vine-mesquite		6.0	N	W	
Western indigo		2.0	N	W	
Wheatgrass: western		7.0	N	W	
Wildrye: Canada		10.0	N	C	
Wildrye: Virginia		10.0	N	C	
PERENNIAL FORBS, LEGUMES, SHRUBS1/ 4/					
Awnless bushsunflower		2.6	N	W	
Engelmanndaisy		15.0	N	C	
Fourwing saltbush		15.5	N	W	
Gayfeather: dotted		10.0	N	W	
Illinois bundleflower		13.6	N	W	
Leadplant		4.5	N	W	
Lespedeza: roundhead		5.0	N	W	
Maximilian sunflower		3.0	N	W	
Menodora: rough, showy		8.0	N	W	
Orange zexmenia		3.4	N	W	
Prairieclover: purple		3.0	N	W	
Prairieclover: white		2.0	N	W	
Sainfoin		38.0	N	W	
Western ragweed		7.5	N	W	
ANNUAL GRASSES1/ 4/					
ANNUAL FORBS, LEGUMES, SHRUBS1/ 4/					
Partridge pea		13.4	N	W	
Sunflower		15.0	N	W	
Sunflower	'Perodovic'	15.0	I	W	
Sweetclover: biennial		3.4	I	C	

Footnotes:

1 / Species are listed by common name and where applicable by released cultivar or variety

2 / Bu = bushels. Conversion factors: 3.5 bu of tops = 1 bale; 7 bu of sprigs = 1 bale; 1.25 cubic feet = 1 bu; 15 pounds = 1 bu.

3 / PLS = Pure Live Seed. To compute: PLS = (% germination + % hard [dormant] seed) X % purity.

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4 / Local harvest may be used when seeding species of unknown or common variety, or natural stands. Local harvested seed should have its geographic origin within 200 miles north, 300 miles south, 100 miles east and 200 miles west of the site where it will be planted. It is also desirable that locally harvested seed be used on soils of the same texture as soils where seed was harvested.

5 / The TZ (tetrazolium salt) test can be used for the germination factor in figuring PLS if the dealer furnishes the seed tag or other proof the test was run by a reputable seed lab.

6/ Rates are based on 20 live seeds per square foot in pure stands. Percentage adjustments to the rate given may be specified in conservation practice standards for specific purposes, sites, mixes, etc. Drill planting is defined as rows spaced less than 20 inches apart.
7/ Rate is for cover or dead litter crop only.
8/ Seeding rate in rows is 5 PLS pounds per acre.